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**DOCUMENT-IDENTIFIER:** JP 10017174 A

**TITLE:** CONVEYANCE BELT UNIT

**PUBN-DATE:** January 20, 1998

**INVENTOR-INFORMATION:**

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MITA IND CO LTD

**COUNTRY**

N/A

**APPL-NO:** JP08170084

**APPL-DATE:** June 28, 1996

**INT-CL (IPC):** B65H005/02, B65H029/16 , G03G015/00

**ABSTRACT:**

**PROBLEM TO BE SOLVED:** To provide a conveyance belt to perform a simple and accurate work to exchange a conveyance belt.

**SOLUTION:** A tension member 604 to exert a tension on a conveyance belt is slid longitudinally of a frame 602 and a distance between belt support rollers 605 and 606 is changed. The tension member 604 is locked in a state that the distance between the rollers is decreased. By releasing lock of the tension member 604, and a tension is exerted on the conveyance belt in a way that a distance between the rollers is linearly increased along the longitudinal direction of the frame 602.

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**TITLE: Conveying belt structure for automatic original document  
supply apparatus of copier - has main frame which is  
provided at one end of first belt supporting roller**

**PATENT-ASSIGNEE: MITA IND CO LTD[MTAI]**

**PRIORITY-DATA: 1996JP-0170084 (June 28, 1996)**

**PATENT-FAMILY:**

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**APPLICATION-DATA:**

<b>PUB-NO</b>	<b>APPL-DESCRIPTOR</b>	<b>APPL-NO</b>	<b>APPL-DATE</b>
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**ABSTRACTED-PUB-NO: JP 10017174A**

**BASIC-ABSTRACT:**

The structure (600) includes a conveying belt (601) which passes over a pair of mutually separated belt supporting rollers (605,606). An original document which is to be read is conveyed by the conveying belt, along a preknown conveying direction. A foldable main frame is provided at one end of the first belt supporting roller, which protrudes parallel to the conveying belt.

A tension member (604) which energises the conveying belt along the length direction of the main frame is slidably attached to the main frame. A sub frame is provided at one end of the second belt supporting roller such that it opposes the main frame. A clamp mechanism is slidably attached to the sub frame, which energises the conveying belt along the direction of the sub frame, but in an opposite direction.

**ADVANTAGE - Enables to fix or support conveyance belt precisely without positional offset. Avoids automatic release of belt supporting rollers while replacing conveying belt. Simplifies structure of main frame.**

**CHOSEN-DRAWING: Dwg.1/14**

**TITLE-TERMS: CONVEY BELT STRUCTURE AUTOMATIC ORIGINAL DOCUMENT SUPPLY APPARATUS  
COPY MAIN FRAME ONE END FIRST BELT SUPPORT ROLL**

**DERWENT-CLASS: P84 Q36 S06**

**EPI-CODES: S06-A03F1;**

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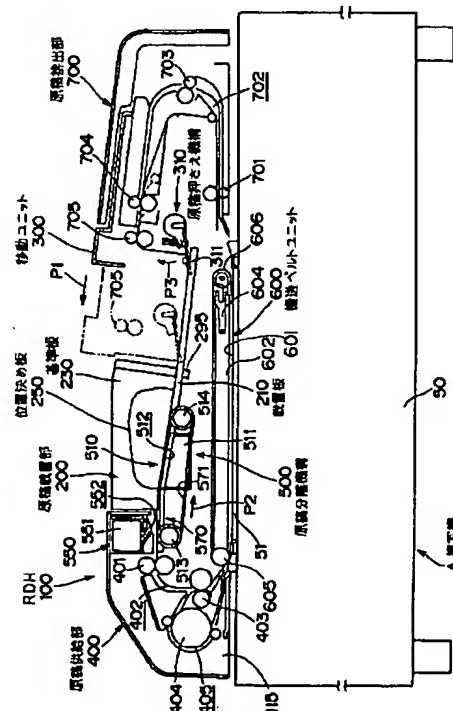
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(54)【発明の名称】 搬送ベルトユニット

(57)【要約】

【課題】搬送ベルトの交換作業を簡単且つ正確に行える搬送ベルトユニットを提供する。

【解決手段】搬送ベルトに張力を与えるテンション部材604をフレーム602の長手方向にスライドさせて、ベルト支持ローラ605、606のローラ間距離を変化させるようにした。ローラ間距離を小さくした状態でテンション部材604に係止できるようにした。テンション部材604の係止を解除してローラ間距離をフレーム602の長手方向に沿って直線的に大きくすることによって、搬送ベルトに張力を与えるようにした。



## 【特許請求の範囲】

【請求項1】第1ローラと第2ローラとの間に無端の搬送ベルトを掛け回し、当該搬送ベルトによって原稿を搬送する搬送ベルトユニットにおいて、一端部に第1ローラが設けられ、ベルトを掛け回す方向に延びたメインフレームと、メインフレームの延長方向に沿ってスライド可能に取り付けられ、延長方向に常時弾性付勢されると共にメインフレームに対して折りたたみ可能であり、且つ延長方向側端部に上記第2ローラが取り付けられたサブフレームと、サブフレームを反延長方向側へスライドさせた状態で当該サブフレームをメインフレームに対して係止する係止機構が備えられていることを特徴とする搬送ベルトユニット。

【請求項2】請求項1記載の搬送ベルトユニットにおいて、メインフレームの他端部に上記延長方向に沿って長手に形成されたスライド溝と、サブフレームの反延長方向側端部に突設されたピンとが係合することにより、サブフレームがメインフレームに対してスライド可能となっており、上記係止機構は、スライド溝の反延長方向側に連続して上記延長方向と交差する方向に延設された延設溝を含んでいることを特徴とする搬送ベルトユニット。

【請求項3】請求項2記載の搬送ベルトユニットにおいて、上記延設溝に設けられ、サブフレームを反延設方向側へスライドさせた状態でサブフレームの反延設方向側端部を係止すべく上記ピンを延設溝の所定位置で保持するための保持手段をさらに備えていることを特徴とする搬送ベルトユニット。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】この発明は、たとえば複写機に用いられる自動原稿供給装置に装備され、原稿を搬送する搬送ベルトを備えた搬送ベルトユニットに関するものである。

## 【0002】

【従来の技術】従来からたとえば複写機においては、複写機本体に装着され、原稿を自動的に複写機本体上の所定位置へ供給すると共に複写機本体上から排出する自動原稿搬送装置が公知である。自動原稿搬送装置には、種々の型式や形状のものがあるが、その一例として図9に示すようなタイプのものがある。

【0003】図9を参照して、自動原稿搬送装置1は、複写機2の上部に装着されている。原稿は、まとめて原稿載置部4の載置板5上に載置する。原稿が載置されると、移動ユニット14が原稿サイズに合わせて矢印13

の方向に沿って移動し、原稿のセットが完了する。各原稿は、一枚づつ原稿供給部6に引き込まれ、給紙経路7に沿って送られ、搬送ベルト8により複写機本体3のコンタクトガラス9上に配置される。複写機本体3は、この原稿に対して所定の画像形成動作を行う。その後原稿は、搬送ベルト8によって原稿排出部10に送られ、排紙経路11を経て再び原稿載置部4に排出される。なお、移動ユニット14は、原稿排出部10に対して進退するようになっている。

【0004】ところで、搬送ベルト8は、フレーム15に装着されており、図示しないモータにより駆動される。搬送ベルト8は、その汚れや摩耗の程度等により新品と交換する必要があるが、従来では、次のようにして交換作業を行っていた。図10ないし図14は、搬送ベルト8の交換作業を示している。図10を参照して、まず、止めねじ16を外すと、フレーム15（図9参照）は、矢印17の方向に回動し、図10のような状態（いわゆる片持ち状態）になる。そして、フレーム15に設けられたテンション部材18を矢印19の方向に回動させる（折り曲げるようにする）と、テンション部材18によって突っ張った状態で張力が付与されていた搬送ベルト8が図11のように弛む。

【0005】詳しく説明すると、図12を参照して、テンション部材18には、引張コイルばね23により図中右側に弾性付勢された支軸20が突設されており、この支軸20は、フレーム15に設けられたスライド溝21に挿入されている。これにより、テンション部材18は、フレーム15に回動自在に支持されていると共に、矢印22の方向に沿ってスライド可能となっている。一方、フレーム15側には、係止用突片24が突設されている。そして、テンション部材18が引張コイルばね23により図中右側へスライドされた結果、係止用突片24がテンション部材18に設けられた係止溝25と係合する。これにより、搬送ベルト8が引っ張られた状態で装着されている。

【0006】搬送ベルト8を取り外すには、図13に示すように、テンション部材18を図中左側へ、すなわち、引張コイルばね23の弾性力に抗してスライドさせる。この状態では、搬送ベルト8に張力が生じないから、テンション部材18を矢印26の方向に容易に回動させることができ、その結果、図14に示す状態となる。そして、このまま搬送ベルト8を紙面に垂直な方向手前側へ引き抜いて取り外した後、新品の搬送ベルトと交換する。新品の搬送ベルトは、上述した取外作業と逆の作業をすることによって取り付けることができる。

## 【0007】

【発明が解決しようとする課題】搬送ベルト8の交換作業は上述のように行うのであるが、従来から次のような問題点があった。新品の搬送ベルトを取り付けるには、まず、図14に示す状態となるように搬送ベルトをフレ

ーム15に被せる。そして、この状態からテンション部材18を回動させて搬送ベルトを装着するのであるが、テンション部材18は、常時引張コイルばね23により搬送ベルトに張力を付与する方向に弾性付勢されているから、引張コイルばね23の弾性力に抗してテンション部材18を一旦図中左側へスライドさせておいて、その状態で搬送ベルトを取り付けなければならない。このため、作業者にとってきわめて作業がしにくいという問題があった。

【0008】そこで、この発明の目的は、容易に搬送ベルトの交換作業を行うことができる搬送ベルトユニットを提供することである。

【0009】

【課題を解決するための手段】本発明の目的を達成するため、請求項1に係る搬送ベルトユニットは、第1ローラと第2ローラとの間に無端の搬送ベルトを掛け回し、当該搬送ベルトによって原稿を搬送する搬送ベルトユニットにおいて、一端部に第1ローラが設けられ、ベルトを掛け回す方向に延びたメインフレームと、メインフレームの延長方向に沿ってスライド可能に取り付けられ、延長方向に常時弾性付勢されると共にメインフレームに対して折りたたみ可能であり、且つ延長方向側端部に上記第2ローラが取り付けられたサブフレームと、サブフレームを反延長方向側へスライドさせた状態で当該サブフレームをメインフレームに対して係止する係止機構が備えられていることを特徴とするものである。

【0010】この構成によれば、搬送ベルトの交換時にサブフレームをスライドさせ、第1ローラと第2ローラとの間のローラ間距離を小さくした状態でサブフレームをメインフレームに対して係止することができる。本発明の目的を達成するため、請求項2に係る搬送ベルトユニットは、請求項1記載の搬送ベルトユニットにおいて、メインフレームの他端部に上記延長方向に沿って長手に形成されたスライド溝と、サブフレームの反延長方向側端部に突設されたピンとが係合することにより、サブフレームがメインフレームに対してスライド可能となっており、上記係止機構は、スライド溝の反延長方向側に連続して上記延長方向と交差する方向に延設された延設溝を含んでいることを特徴とするものである。

【0011】この構成によれば、請求項1に係る発明と同様の作用を奏する。特に本請求項に係る発明では、サブフレームに設けられたピンをメインフレームに形成されたスライド溝に沿って移動させることによって上記ローラ間距離を変えることができる。そして、ピンをスライド溝に延設された延設溝に進入させると、延設溝は、スライド溝に対して交差方向に形成されていることから、ピンを延設溝内で保持することができる。

【0012】本発明の目的を達成するため、請求項3に係る搬送ベルトユニットは、請求項2記載の搬送ベルトユニットにおいて、上記延設溝に設けられ、サブフレ

ームを反延設方向側へスライドさせた状態でサブフレームの反延設方向側端部を係止すべく上記ピンを延設溝の所定位置で保持するための保持手段をさらに備えていることを特徴とするものである。

【0013】この構成によれば、請求項2に係る発明と同様の作用を奏する。加えて、ピンをスライド溝に延設された延設溝に進入させると、保持手段によりピンを延設溝内で保持することができる。従って、第1ローラと第2ローラとの間のローラ間距離を小さくした状態でサブフレームをメインフレームに対して確実に係止しておくことができる。

【0014】

【発明の実施の形態】以下、本発明の一実施形態について添付図面を参照して詳細に説明する。図1は、この発明の一実施形態に係る搬送ベルトユニット600が採用された複写機Aの構造を示す断面図である。同図を参照して、この複写機Aは、複写機本体50と、複写機本体50の上部に装着され、複写機本体50側へ原稿を自動的に供給するエアファード式循環原稿搬送装置（以下、「RDH」という。）100とを有している。このRDH100は、複写機本体50に対して回動可能に取り付けられており、複写機本体50の上部を覆う状態（図に示す状態）と、開放する状態とに変位することができるようになっている。

【0015】本発明は、このRDH100に関するものであり、搬送ベルトユニット600は、RDH100に装着されている。以下、RDH100の概略構成および機能について説明する。RDH100は、原稿を載置するための原稿載置部200と、載置された原稿を位置決めしてセットするための移動ユニット300と、セットされた原稿を複写機本体50へ供給するための原稿供給部400と、原稿供給部400へ原稿を一枚ずつ送るために、セットされた原稿を分離するための原稿分離機構500と、複写機本体50側へ供給された原稿を当該供給方向または反供給方向に移動させるための搬送ベルトユニット600と、複写機本体50側から原稿を排出するための原稿排出部700とを備えている。

【0016】次に、RDH100の各部の機能について概括的に説明する。まず、原稿（図示せず）を原稿載置部200の載置板210上に配置するのであるが、本実施形態に係るRDH100は、B5～A3サイズ of 原稿をセットすることができるようになっているため、原稿サイズに合わせて、基準板230に対向配置された位置決め板250を移動（図において紙面に垂直な方向に移動）させる。これにより、基準板230と位置決め板250との間で各サイズの原稿を図において紙面に垂直な方向に関して位置決めすることができる。

【0017】一方、原稿を載置すると、これを載置板210の下方に設置された原稿有無センサ295により検知し、これと前述の原稿サイズ情報とに基づいて移動ユ

ニット300が図の矢印P1の方向に移動する。これにより、原稿を図中左右方向に関して位置決めすることができる。また、移動ユニット300には、原稿押さえ機構310が備えられており、押さえバー311が一旦矢印P3の方向に回転して起立した後倒伏されることにより、原稿の後端部が押さえられる。このように原稿が2方向に位置決めされた状態で原稿のセットが完了する。

【0018】原稿載置部200にセットされた原稿は、原稿供給部400に導かれ、給紙ローラ対401により給紙経路402に沿って送られた後、複写機本体50のコンタクトガラス51上に配置される。なお、参照符号403は、レジストローラ対を示している。レジストローラ対403は、給紙経路402に沿って送られる原稿を給紙経路402中で一旦停止させてコンタクトガラス51上に送り込むタイミングを合わせるためのものである。また、参照符号404は、反転ローラ対を示している。反転ローラ対404は、いわゆる両面原稿を反転させるためのものであって、一旦コンタクトガラス51上に配置された原稿を引き戻して反転経路405に沿って送るようになっている。反転された原稿は、再びレジストローラ対403を介してコンタクトガラス51上に送り込まれる。

【0019】原稿分離機構500は、原稿が原稿供給部400に導かれるに先立ってエアーを用いて原稿を分離するものであり、エアーを用いて原稿を分離する方法は公知である（特開昭61-291339号公報参照）。この原稿分離機構500は、載置された原稿のうち最下段の原稿から順に原稿供給部400に引き込むようになり、エアーにより最下段の原稿を吸い付ける原稿吸着部510と、吸い付けられた原稿よりも上段側の原稿をエアーにより浮揚させる原稿浮揚部550と、吸い付けられた原稿を原稿供給部400側へ引き込むための原稿引込部570とを有している。

【0020】具体的に説明すると、原稿吸着部510は、図示しない吸込ファンを駆動することによって、吸込ダクト511の、載置板210上に開口された吸込口512から空気を吸い込んで最下段の原稿を吸い付けるようになっている。また、原稿浮揚部550は、図示しない送風ファンを駆動することにより送風ダクト551の送風口552から空気を吹き出し、最下段の原稿よりも上段側の原稿を浮揚させるようになっている。さらに、原稿引込部570は、無端の引込ベルト571を有している。この引込ベルト571は、ローラ513、514に掛け回され、上記吸込口512を覆う状態で配置されている。引込ベルト571には、複数の貫通孔（図示せず）が形成されており、このため、上記吸込口512からエアーが吸い込まれると、最下段の原稿は、各貫通孔に吸い付けられる結果、引込ベルト571に付着した状態となる。そして、ローラ513が図示しないモータにより駆動されて引込ベルト571が矢印P2の方向

に駆動されることにより、最下段の原稿が引き込まれて原稿供給部400に導かれるようになっている。

【0021】さて、コンタクトガラス51上に配置された原稿は、複写機本体50による所定の複写操作がなされた後に搬送ベルトユニット600によって原稿排出部700に送られる。搬送ベルトユニット600は、図に示す状態でコンタクトガラス51と対向配置されており、図示しないモータにより駆動される。これにより、コンタクトガラス51上の原稿は、原稿排出部700側へ送られる。なお、原稿を反転させるときには、搬送ベルトユニット600を逆回転させて反転ローラ対404側に原稿を送るようになっている。

【0022】原稿排出部700へ送られた原稿は、排紙ローラ対701により排紙経路702内に引き込まれる。その後、原稿は、排紙ローラ対703により排紙経路702に沿って送られ、排紙ローラ対704、705により再び原稿載置部200に排出されるようになっている。なお、上記移動ユニット300は、原稿排出部700に対して進退するようになり、排紙経路702の一部（排紙方向の下流側）は、原稿排出部700と移動ユニット300との間に形成される隙間により構成されている。また、移動ユニット300が原稿排出部700に対して進退することから、上記排紙ローラ対705は、移動ユニット300側に設けられており、移動ユニット300の移動に伴って移動するようになっている。

【0023】本実施形態の特徴とするところは、搬送ベルトユニット600は、原稿に接触して原稿を搬送する搬送ベルト601を備えており、この搬送ベルト601の交換作業を容易かつ正確に行うことができるようになっている点にある。以下、搬送ベルトユニット600について詳しく説明する。図2は、搬送ベルトユニット600のフレーム602の要部斜視図である。図1および図2を参照して、搬送ベルトユニット600は、フレーム602と、これに装着された搬送ベルト601とを有しており、図8および図9に示したような状態で、RDH100のケーシング115の底部に回転可能に取り付けられている。

【0024】フレーム602は、本体603（メインフレーム）と、本体603に回転自在に取り付けられたテンション部材604（サブフレーム）とを有している。本体603の一端側およびテンション部材604の先端側には、ベルト支持ローラ605、606が設けられており、テンション部材604を図2中矢印607の向きにスライドさせることによって、両ベルト支持ローラ605、606間の距離を延ばして搬送ベルト601に張力を付与することができるようになっている。なお、図2では、両ベルト支持ローラ605、606間の距離を延ばした状態となっている。

【0025】本体603は、たとえば断面略コ字状の骨

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部材608、609を用いて組み立てることができ、図2では一部しか図示されていないが全体として矩形の枠体を形成している。本体603の内部には、板部材606が嵌め込まれるようにして取り付けられており、本体603の剛性を向上させている。なお、板部材606には、適宜くり抜き穴607が形成されており、図示していないが、これらくり抜き穴607の内側には、掛け回された搬送ベルト601の撓みを抑えるためのローラ等が配置されるようになってい

る。また、この抜き穴607によって、本体603の軽量化を図ることもできる。【0026】対向する骨部材608には、それぞれ、互いに対向する位置にL形の貫通溝610が形成されている。この貫通溝610は、テンション部材604のスライドを案内するものであって、スライド溝部611と、これに直交して上方に延設された延設溝部612とを有している。貫通溝610の溝幅は、テンション部材604に設けられているピン613の外径に対応している。また、図3は、貫通溝610の拡大図である。図3を参照して、延設溝部612には、上記ピン613の一部が嵌まり込むことができる凹部614が形成されている。この凹部614は、ピン613が嵌まり込むことによ

って、ピン613を仮保持することができるようになってい

る(図7参照)。なお、この凹部614を構成する壁面形状は、ピン613の外径に対応させておくのが好ましい。【0027】再び図2を参照して、対向する骨部材608の他端部には、それぞれ、突片616が設けられている。この突片616は、テンション部材604と係合することによって、テンション部材604を図に示す状態(両ベルト支持ローラ605、606間の距離を延ばした状態)に保持するためのものである。次に、テンション部材604は、フレーム602の本体608に連結された一対の連結板615と、両連結板615の先端部間に架け渡すように設けられたベルト支持ローラ606とを有している。ベルト支持ローラ606は、軸617により回動自在に支持されている。なお、図1を参照して、本体603の一端側に設けられたベルト支持ローラ605も、このベルト支持ローラ606と同様のものであり、図示しない回転中心軸を介して本体603に回動自在に取り付けられている。

【0028】図2を参照して、連結板615の基端部には、ピン613が突設されている。このピン613は、上述したように本体603に設けられた貫通溝610に挿入されており、これにより、テンション部材604が本体603に対して矢印619の方向に沿って回動自在に、しかも矢印607の方向に沿ってスライド自在に取り付けられている。

【0029】各連結板615の先端側には、上記突片616が係合し得る係合溝618が形成されている。この係合溝618は、図において連結板615の上縁620

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から下方に切り込まれ、さらに基端側(ピン613が突設された側)に所定長さだけ延ばされている。従って、突片616が係合溝618と係合するためには、連結板616を回動させることにより突片616を係合溝618の開口部621から挿入させ、その後、連結板616をスライドさせることにより突片616を係合溝618に沿って移動させるようにする必要がある。

【0030】また、本実施形態では、本体603の骨部材609とピン613との間に引張コイルばね(以下、「ばね」という。)622が介装されている。これにより、ピン613は常時矢印607の方向に弾性付勢されている。つまり、テンション部材604は、常時矢印607の方向に付勢され、その結果、両ベルト支持ローラ605、606間の距離は、常に広げられるようになっている。

【0031】図1を参照して、搬送ベルト601は、たとえば布製のベルトに軟質の合成樹脂をコーティングすることにより構成することができる。この搬送ベルト601は、無端のベルトであって、両ベルト支持ローラ605、606間に掛け回すようにして装着されている。そして、ベルト支持ローラ605が駆動されることにより、搬送ベルト601がフレーム602の長手方向に沿って循環するように送られ、このように送られる搬送ベルト601によって原稿が搬送されるようになっている。

【0032】ところで、搬送ベルト601は、原稿に接触して搬送するものであるため、汚れや、場合によっては損傷を受けることもある。このため、搬送ベルト601は、定期的に交換すべき部品である。このような交換部品は、その交換作業が容易であることが好ましい。本実施形態に係る搬送ベルトユニット600では、次のようにして搬送ベルト601を交換することができる。

【0033】① まず、図4を参照して、同図は、搬送ベルト601が装着されている状態を示しており、ばね622の弾性力によってテンション部材604が図中右側へ付勢されている。つまり、両ベルト支持ローラ(605)、606間の距離が大きくなっており、搬送ベルト601に張力が付与されている。従って、この状態では、搬送ベルト601を取り外すことはできない。

【0034】② 図5を参照して、ベルト支持ローラ606を手で把持し、ばね622の弾性力に抗してテンション部材604を図中左側へ押圧すると、ピン613がスライド溝部611に沿ってスライドする。これにより、両ベルト支持ローラ(605)、606間の距離が小さくなり、搬送ベルト601は、若干弛んだ状態(張力が生じていない状態)となる。また、突片616が係合溝618を相対的に右側に移動し、係合溝618の開口部621の位置に配置される。

【0035】③ 図6を参照して、テンション部材604を図中右回りに回動させると、搬送ベルト601は図



中下方に垂れ下がった状態となる。この状態で搬送ベルト601を紙面に対して垂直方向手前側に引き抜くようにして容易に取り外すことができる。

④ 次いで、新品の搬送ベルト601を取り付ける。この取り付けは、テンション部材604が図6の状態となっているから、搬送ベルト601をフレーム602に被せるようにして容易に行うことができる。そして、テンション部材604を図中左側に回動させる。

【0036】⑤ このとき、図7に示すように、ピン613を一旦延設溝部612に進入させて凹部614に嵌め込む。これにより、ピン613は、凹部614によって延設溝部612内で仮保持され、その結果、テンション部材604の基端部が図に示す位置で係止され、ベルト支持ローラ(605)、606間の距離が小さくされた状態を維持することができる。しかも、この状態では、搬送ベルト601に張力は生じていないので、搬送ベルト601の位置を修正して、ベルト支持ローラ(605)、606およびフレーム602に対する傾き等を直して正しく配置することができる。

【0037】特に、本実施形態では、ばね622の取付位置は、図7の状態では、ピン613を所定の角度 $\alpha$ だけ上方に引っ張るように、すなわち、ピン613に対して当該ピン613を延設溝部612の上方へ引き上げる方向に力が加わるように設定されている。従って、作業中にピン613が不用意に凹部614から外れてテンション部材604が右側にスライドしてしまうことがなく、確実にベルト支持ローラ(605)、606間の距離が小さくされた状態を維持することができる。

【0038】⑥ 搬送ベルト601の位置を修正した後、ベルト支持ローラ606を上方へ押し上げる。つまり、本体603に突設された突片616を支点にして、テンション部材604を矢印625の方向に回動させる。これにより、凹部614に嵌まり込んでいたピン613が外れ、図5に示したようにスライド溝部611に進入する。その後、ピン613は、ばね622に引っ張られてスライド溝部613をスライドするので、ベルト支持ローラ(605)、606間の距離は、フレーム602の長手方向に沿って大きくなり、搬送ベルト601に張力が付与される。

【0039】以上のように本実施形態に係る搬送ベルトユニット600によれば、搬送ベルト601の交換作業時に、予めベルト支持ローラ605、606間の距離を小さくしておき、その状態で新品の搬送ベルト601をフレーム602の長手方向に沿って掛け回した後、その位置を修正して正しく配置したうえで、フレーム602の長手方向に沿って直線的にベルト支持ローラ605、606間の距離を大きくすることにより搬送ベルト601に張力を付与するので、フレーム602に対して搬送ベルト601を容易に装着することができる。しかも、装着時に搬送ベルト601のずれ等を生じさせることも

ない。また、上記ばね622により、搬送ベルト601の交換作業中に不用意にテンション部材604が右側にスライドしてしまうことがないので、搬送ベルト601の位置修正作業も簡単に行うことができるという利点もある。

【0040】加えて、本実施形態では、ピン613を仮保持してテンション部材604の基端部を、両ベルト支持ローラ605、606のローラ間距離が小さくなるように係止する手段として貫通溝610、630を採用しているため、テンション部材604を係止するための構造を簡略化でき、搬送ベルトユニット600を安価に製造することができるという利点もある。

【0041】なお、この発明は上記実施形態に限定されるものではなく、次のような設計変更を施すことができる。図8は、本体603に設けられた貫通溝610(図3参照)の設計変更例を示す図である。図8を参照して、本設計変更例に係る貫通溝630が上記貫通溝610と異なるところは、貫通溝610の延設溝部612に設けられた凹部614は、ピン613の外径に対応させた、いわゆるアール面により構成されているのに対し、本設計変更例では、延設溝部631に形成された凹部632は、延設溝部631の溝幅を延設溝部631の延設方向に沿って漸次広げる屈曲した傾斜面により構成されている点にある。このような傾斜面により凹部632を構成しても、図に示すように、ピン613を延設溝部631内で仮保持することができる。

【0042】なお、本実施形態では、ピン613を仮保持するために凹部614、632を設けたが、ピン613と延設溝部612、633との間の摩擦係数を適当に設定することにより、ばね622の弾性力によって両者間に所定の摩擦力が生じ、ピン613を延設溝部612、631内で仮保持するが可能である。つまり、凹部614、632を無くすこともできる。

【0043】また、本実施形態では、ピン613を仮保持するために貫通溝610、630を採用しているが、ピン613をベルト支持ローラ605、606間の距離が小さくなる位置に係止でき、かつ所望時に当該係止状態を解除してベルト支持ローラ605、606間の距離を大きくすることができる機構であれば他の機構を用いることもできる。

【0044】

【発明の効果】請求項1に係る発明によれば、搬送ベルトの交換作業時に、予め搬送ベルトを支持する第1および第2ローラ間の距離を小さくしておき、その状態で新品の搬送ベルトをメインフレームの延長方向に沿って掛け回した後、サブフレームをメインフレームに対してスライドさせることによって、搬送ベルトに張力を付与することができるので、搬送ベルトの装着作業がきわめて容易である。その結果、搬送ベルトのずれを防止して正確に装着することができる。

【0045】請求項2に係る発明によれば、請求項1に係る発明と同様の効果を奏する。加えて、ローラ間距離を小さくしておくために、サブフレームに設けたピンをメインフレームに設けた延設溝の凹部に嵌め込むというごく簡単な構造を採用しているため、大幅なコストアップにつまがらないという利点がある。請求項3に係る発明によれば、請求項2に係る発明と同様の効果を奏する。加えて、保持手段によって上記ローラ間距離を確実に小さくしておくことができるので、搬送ベルトの交換作業中に係止状態が不用意に解除されることがなく、装着ミスを極力抑えることができる。

#### 【図面の簡単な説明】

【図1】本発明の一実施形態に係る複写機の構造を示す模式図である。

【図2】本実施形態に係る搬送ベルトユニットの本体の要部斜視図である。

【図3】貫通溝の拡大図である。

【図4】搬送ベルトが装着されている状態での搬送ベルトユニットの要部側面図である。

【図5】ベルト支持ローラ間の距離を小さくした状態での搬送ベルトユニットの要部側面図である。

【図6】テンション部材を回動させた状態での搬送ベルトユニットの要部側面図である。

【図7】ピンを仮保持した状態での搬送ベルトユニットの要部側面図である。

【図8】貫通溝の設計変更例を示す図である。

【図9】従来の自動原稿搬送装置の一例を示す模式図である。

【図10】自動原稿搬送装置を回動起立させ、搬送ベルト装置を取り外す作業を示す要部斜視図である。

【図11】搬送ベルトを取り外す作業を示す要部斜視図

である。

【図12】搬送ベルトが装着されている状態での搬送ベルトユニットの側面図である。

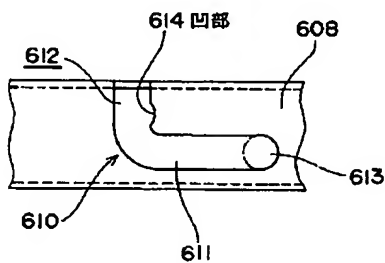
【図13】搬送ベルトを取り外すためにテンション部材をスライドさせた状態を示す搬送ベルトユニットの要部側面図である。

【図14】搬送ベルトを取り外すためにテンション部材を回動させた状態を示す搬送ベルトユニットの要部側面図である。

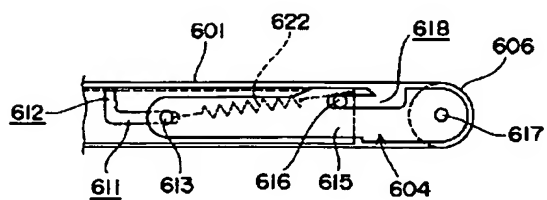
#### 【符号の説明】

100 RDH  
600 搬送ベルトユニット  
601 搬送ベルト  
602 フレーム  
603 本体  
604 テンション部材  
605 ベルト支持ローラ  
606 ベルト支持ローラ  
610 貫通溝  
611 スライド溝部  
612 延設溝部  
613 ピン  
614 凹部  
615 連結板  
616 突片  
618 係合溝  
622 ばね  
630 貫通溝  
631 延設溝部  
632 凹部

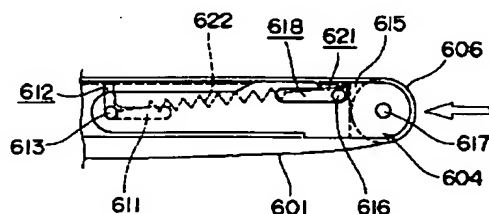
【図3】



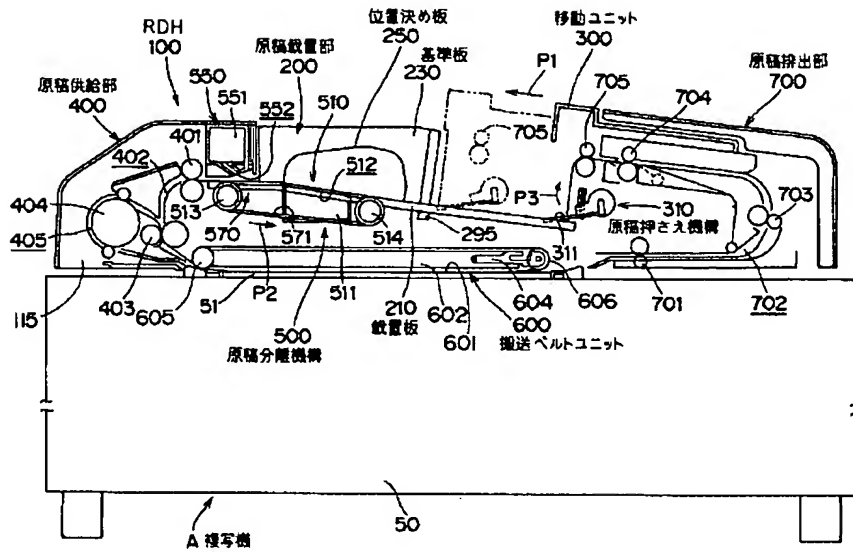
【図4】



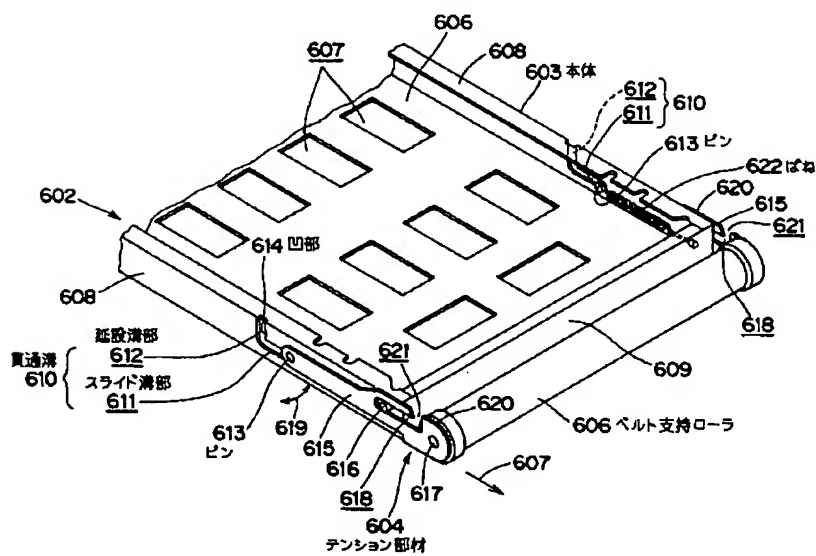
【図5】



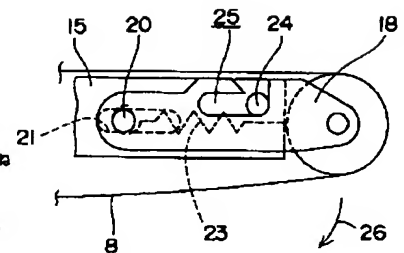
【図1】



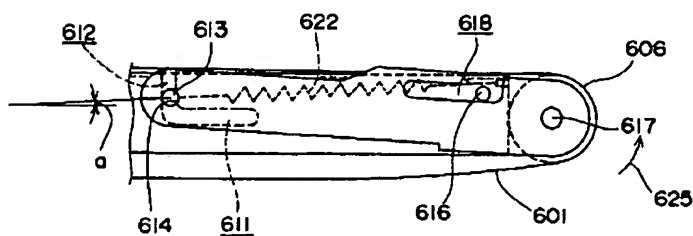
【図2】



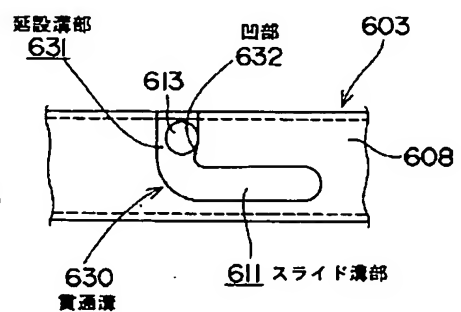
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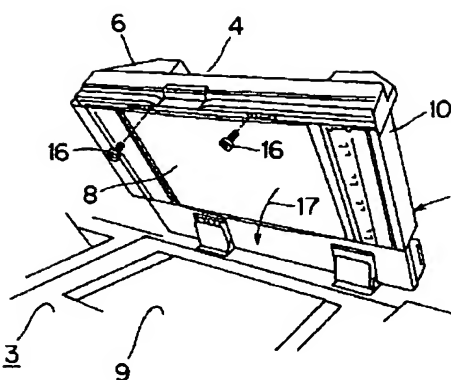
【図7】



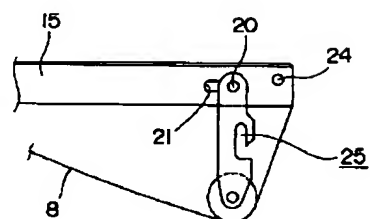
【図8】



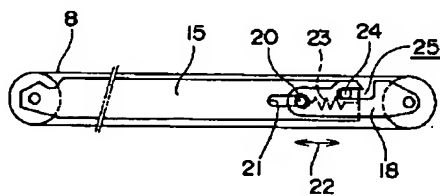
【図10】



【図14】



【例 12】



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CLAIMS

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[Claim(s)]

[Claim 1] In the conveyance belt unit which hangs an endless conveyance belt about between the 1st roller and the 2nd roller, and conveys a manuscript with the conveyance belt concerned The mainframe prolonged in the direction on which the 1st roller is formed in the end section and a belt is hung about, While being attached possible [ a slide ] along the extended direction of a mainframe and always carrying out elastic energization in the extended direction, it can fold to a mainframe. And the conveyance belt unit characterized by having the stop device in which the subframe concerned is stopped to a main frame in the condition of having made the subframe by which the 2nd roller of the above was attached in the extended direction side edge section, and the subframe sliding to the anti-extension direction side.

[Claim 2] When the slide slot formed in the other end of a main frame along the above-mentioned extended direction at straight side and the pin which protruded on the anti-extension direction side edge section of a subframe are engaged in a conveyance belt unit according to claim 1 It is the conveyance belt unit characterized by including the installation slot installed in the direction which the slide of a subframe is attained to the mainframe, and the above-mentioned stop device follows the anti-extension direction side of a slide slot, and intersects the above-mentioned extended direction.

[Claim 3] The conveyance belt unit characterized by having further the maintenance means for holding the above-mentioned pin in the predetermined location of an installation slot that the anti-installation direction side edge section of a subframe should be stopped in the condition of it being prepared in the above-mentioned installation slot, and having made the subframe sliding to the anti-installation direction side in a conveyance belt unit according to claim 2.

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[Translation done.]

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] The automatic manuscript feeder used for a copying machine is equipped with this invention, and it relates to the conveyance belt unit equipped with the conveyance belt which conveys a manuscript.

[0002]

[Description of the Prior Art] While the body of a copying machine is equipped in a copying machine from the former and supplying a manuscript to the predetermined location on the body of a copying machine automatically, the automatic manuscript transport device discharged from the body of a copying machine is well-known. Although there are various form and a thing of a configuration in an automatic manuscript transport device, there is a thing of a type as shown in drawing 9 as the example.

[0003] The upper part of a copying machine 2 is equipped with the automatic manuscript transport device 1 with reference to drawing 9. A manuscript is collectively laid on the installation plate 5 of the manuscript installation section 4. If a manuscript is laid, a mobile unit 14 will move along the direction of an arrow head 13 according to manuscript size, and the set of a manuscript will be completed. Each one manuscript is drawn at a time in the manuscript feed zone 6, is sent in accordance with the feed path 7, and is arranged on the contact glass 9 of the body 3 of a copying machine with the conveyance belt 8. The body 3 of a copying machine performs predetermined image formation actuation to this manuscript. After that, with the conveyance belt 8, a manuscript is sent to the manuscript discharge section 10, and is again discharged by the manuscript installation section 4 through the delivery path 11. In addition, a mobile unit 14 moves to the manuscript discharge section 10.

[0004] By the way, the frame 15 is equipped with the conveyance belt 8, and it is driven by the motor which is not illustrated. The conveyance belt 8 needed to be exchanged for the new article with the dirt, extent of wear, etc., and was performing exchange as follows in the former. Drawing 10 thru/or drawing 14 show exchange of the conveyance belt 8. If a setscrew 16 is first removed with reference to drawing 10, it rotates in the direction of an arrow head 17, and a frame 15 (refer to drawing 9) will be in a condition (the so-called cantilever condition) like drawing 10. and the tension member 18 prepared in the frame 15 is rotated in the direction of an arrow head 19 -- making (it being made to bend) -- the conveyance belt 8 with which tension was given in the condition that it was stubborn with the tension member 18 slackens like drawing 11.

[0005] If it explains in detail, with reference to drawing 12, the pivot 20 by which elastic energization was carried out with the extension spring 23 at the drawing Nakamigi side protrudes on the tension member 18, and this pivot 20 is inserted in the slide slot 21 established in the frame 15. Thereby, the tension member 18 can be slid along the direction of an arrow head 22 while being supported by the frame 15 free [rotation]. On the other hand, the protruding piece 24 for a stop protrudes on the frame 15 side. And as a result of sliding the tension member 18 to a drawing Nakamigi side by the extension spring 23, the protruding piece 24 for a stop engages with the stop slot 25 established in the tension member 18. Thereby, it is equipped where the conveyance belt 8 is pulled.

[0006] In order to remove the conveyance belt 8, the tension member 18 is made to resist and slide to the elastic force of the left-hand side 23 in drawing, i.e., an extension spring, as shown in drawing 13. In this condition, since tension does not arise to the conveyance belt 8, it will be in the condition which the tension member 18 can be easily rotated in the direction of an arrow head 26, consequently shows in drawing 14. And it exchanges for a new conveyance belt, after drawing out and removing the conveyance belt 8 to a direction near side perpendicular to space as it is. A new conveyance belt can be attached by doing an activity contrary to the removal activity mentioned above.

[0007]

[Problem(s) to be Solved by the Invention] Although exchange of the conveyance belt 8 was performed as mentioned

above, there were the following troubles from the former. In order to attach a new conveyance belt, a conveyance belt is put on a frame 15 so that it may be in the condition which shows in drawing 14 first. And although the tension member 18 is rotated from this condition and it equips with a conveyance belt, since elastic energization is carried out in the direction which always gives tension to a conveyance belt with an extension spring 23, the tension member 18 must resist the elastic force of an extension spring 23, must make the tension member 18 once have to slide to the left-hand side in drawing, and must attach a conveyance belt in that condition. For this reason, there was a problem of being very hard for an operator to do an activity.

[0008] Then, the purpose of this invention is offering the conveyance belt unit which can perform exchange of a conveyance belt easily.

[0009]

[Means for Solving the Problem] In order to attain the purpose of this invention, the conveyance belt unit concerning claim 1 In the conveyance belt unit which hangs an endless conveyance belt about between the 1st roller and the 2nd roller, and conveys a manuscript with the conveyance belt concerned The mainframe prolonged in the direction on which the 1st roller is formed in the end section and a belt is hung about, While being attached possible [ a slide ] along the extended direction of a mainframe and always carrying out elastic energization in the extended direction, it can fold to a mainframe. And it is characterized by having the stop device in which the subframe concerned is stopped to a mainframe in the condition of having made the subframe by which the 2nd roller of the above was attached in the extended direction side edge section, and the subframe sliding to the anti-extension direction side.

[0010] According to this configuration, a subframe can be made to be able to slide at the time of exchange of a conveyance belt, and where distance between rollers between the 1st roller and the 2nd roller is made small, a subframe can be stopped to a mainframe. In order to attain the purpose of this invention, the conveyance belt unit concerning claim 2 When the slide slot formed in the other end of a main frame along the above-mentioned extended direction at straight side and the pin which protruded on the anti-extension direction side edge section of a subframe are engaged in a conveyance belt unit according to claim 1 The slide of a subframe is attained to the mainframe and the above-mentioned stop device is characterized by including the installation slot installed in the direction which follows the anti-extension direction side of a slide slot, and intersects the above-mentioned extended direction.

[0011] According to this configuration, the same operation as invention concerning claim 1 is done so. In invention concerning especially this claim, the above-mentioned distance between rollers is changeable by moving the pin prepared in the subframe along the slide slot formed in the mainframe. And if a pin is made to advance into the installation slot installed in the slide slot, since the installation slot is formed in the crossover direction to the slide slot, it can hold a pin by installation Mizouchi.

[0012] In order to attain the purpose of this invention, in a conveyance belt unit according to claim 2, the conveyance belt unit concerning claim 3 is prepared in the above-mentioned installation slot, and is characterized by to have further the maintenance means for holding the above-mentioned pin in the predetermined location of an installation slot that the anti-installation direction side edge section of a subframe should be stopped in the condition of having made the subframe sliding to the anti-installation direction side.

[0013] According to this configuration, the same operation as invention concerning claim 2 is done so. In addition, if a pin is made to advance into the installation slot installed in the slide slot, a pin can be held by installation Mizouchi with a maintenance means. Therefore, where distance between rollers between the 1st roller and the 2nd roller is made small, a subframe can be certainly stopped to a mainframe.

[0014]

[Embodiment of the Invention] Hereafter, 1 operation gestalt of this invention is explained to a detail with reference to an accompanying drawing. Drawing 1 is the sectional view showing the structure of a copying machine A where the conveyance belt unit 600 concerning 1 operation gestalt of this invention was adopted. With reference to this drawing, the upper part of the body 50 of a copying machine and the body 50 of a copying machine is equipped with this copying machine A, and it has the air FADO type circulation manuscript transport device (henceforth "RDH") 100 which supplies a manuscript to the body 50 side of a copying machine automatically. This RDH100 is attached rotatable to the body 50 of a copying machine, and can displace now the upper part of the body 50 of a copying machine in a wrap condition (condition shown in drawing), and the condition of opening.

[0015] RDH100 is equipped with the conveyance belt unit 600 for this invention about this RDH100. Hereafter, the outline configuration and function of RDH100 are explained. The manuscript installation section 200 for RDH100 to lay a manuscript and the mobile unit 300 for positioning the laid manuscript and setting, In order to send one manuscript at a time to the manuscript feed zone 400 and the manuscript feed zone 400 for supplying the set

manuscript to the body 50 of a copying machine. It has the manuscript separation mechanism 500 for separating the set manuscript, the conveyance belt unit 600 for moving the manuscript supplied to the body 50 side of a copying machine in the supply direction concerned or the anti-supply direction, and the manuscript discharge section 700 for discharging a manuscript from the body 50 side of a copying machine.

[0016] Next, the function of each part of RDH100 is explained generally. First, although a manuscript (not shown) is arranged on the installation plate 210 of the manuscript installation section 200, since the manuscript of B5 - A3 size can be set now, RDH100 concerning this operation gestalt moves the locating plate 250 by which opposite arrangement was carried out to an orientation plate 230 according to manuscript size (in drawing, it moves in the direction perpendicular to space). Thereby, the manuscript of each size can be positioned about a direction perpendicular to space in drawing between an orientation plate 230 and a locating plate 250.

[0017] On the other hand, if a manuscript is laid, this will be detected by the manuscript existence sensor 295 installed under the installation plate 210, and a mobile unit 300 will move in the direction of the arrow head P1 of drawing based on this and the above-mentioned manuscript size information. Thereby, a manuscript can be positioned about the longitudinal direction in drawing. Moreover, the mobile unit 300 is equipped with the original-cover device 310, and the back end section of a manuscript is pressed down by lodging, once the presser-foot bar 311 rotates and stands up in the direction of an arrow head P3. Thus, the set of a manuscript is completed after the manuscript has been positioned by the 2-way.

[0018] The manuscript set to the manuscript installation section 200 is led to the manuscript feed zone 400, and after being sent by 401 in accordance with the feed path 402, it is arranged on the feed roller pair contact glass 51 of the body 50 of a copying machine. In addition, the reference mark 403 shows the resist roller pair. Resist roller pair 403 is for doubling the timing which is made to suspend the manuscript sent in accordance with the feed path 402 in the feed path 402, and is sent in on contact glass 51. Moreover, the reference mark 404 shows the reversal roller pair. Reversal roller pair 404 is for reversing the so-called double-sided manuscript, pulls back the manuscript once arranged on contact glass 51, and sends it in accordance with the reversal path 405. the reversed manuscript -- again -- a resist roller pair -- it is sent in on contact glass 51 through 403.

[0019] The method of the manuscript separation mechanism 500 preceding that a manuscript is led to the manuscript feed zone 400, separating a manuscript using Ayr, and separating a manuscript using Ayr is well-known (refer to JP,61-291339,A). This manuscript separation mechanism 500 has the manuscript adsorption section 510 which draws in the manuscript feed zone 400 sequentially from the manuscript of the bottom among the laid manuscripts, and attracts the manuscript of the bottom by Ayr, the manuscript floatage section 550 which floats the manuscript by the side of an upper case by Ayr rather than the attracted manuscript, and the manuscript lead-in section 570 for drawing the attracted manuscript in the manuscript feed zone 400 side.

[0020] If it explains concretely, by driving the intake fan who does not illustrate, the manuscript adsorption section 510 will inhale air from the inlet port 512 by which opening was carried out on the installation plate 210 of an inlet duct 511, and will attract the manuscript of the bottom. Moreover, by driving the blower fan which is not illustrated, the manuscript floatage section 550 blows off air from the ventilation opening 552 of a fan duct 551, and floats the manuscript by the side of an upper case rather than the manuscript of the bottom. Furthermore, the manuscript lead-in section 570 has the endless lead-in belt 571. This lead-in belt 571 is hung about on a roller 513,514, and the above-mentioned inlet port 512 is arranged in the state of the wrap. Two or more through tubes (not shown) are formed in the lead-in belt 571, and if Ayr is absorbed from the above-mentioned inlet port 512 for this reason, the manuscript of the bottom will be in the condition of having adhered to the lead-in belt 571, as a result of being attracted by each through tube. And when it drives by the motor which a roller 513 does not illustrate and the lead-in belt 571 drives in the direction of an arrow head P2, the manuscript of the bottom is drawn and it is led to the manuscript feed zone 400.

[0021] Now, the manuscript arranged on contact glass 51 is sent to the manuscript discharge section 700 by the conveyance belt unit 600, after the predetermined copy actuation by the body 50 of a copying machine is made. Opposite arrangement is carried out with contact glass 51 in the condition which shows in drawing, and the conveyance belt unit 600 is driven by the motor which is not illustrated. Thereby, the manuscript on contact glass 51 is sent to the manuscript discharge section 700 side. In addition, when reversing a manuscript, inverse rotation of the conveyance belt unit 600 is carried out, and a manuscript is sent to reversal roller pair 404 side.

[0022] the manuscript sent to the manuscript discharge section 700 -- a delivery roller pair -- it is drawn by 701 in the delivery path 702. then, a manuscript -- a delivery roller pair -- in accordance with the delivery path 702, it sends by 703 -- having -- a delivery roller pair -- it is again discharged by 704,705 at the manuscript installation section 200. In addition, the above-mentioned mobile unit 300 moves to the manuscript discharge section 700, and a part of delivery



path 702 (downstream of the delivery direction) is constituted by the clearance formed between the manuscript discharge section 700 and a mobile unit 300. moreover, the delivery roller pair above-mentioned since a mobile unit 300 moves to the manuscript discharge section 700 -- 705 is prepared in the mobile unit 300 side, and moves with migration of a mobile unit 300.

[0023] The conveyance belt unit 600 is equipped with the conveyance belt 601 which contacts a manuscript and conveys a manuscript, and the place by which it is characterized [ of this operation gestalt ] has it in the point that exchange of this conveyance belt 601 can be performed now easily and correctly. Hereafter, the conveyance belt unit 600 is explained in detail. Drawing 2 is the important section perspective view of the frame 602 of the conveyance belt unit 600. With reference to drawing 1 and drawing 2 , the conveyance belt unit 600 has the frame 602 and the conveyance belt 601 with which this was equipped, is in a condition as shown in drawing 8 and drawing 9 , and is attached in the pars basilaris ossis occipitalis of the casing 115 of RDH100 rotatable.

[0024] The frame 602 has the body 603 (mainframe) and the tension member 604 (subframe) attached in the body 603 free [ rotation ]. The belt support roller 605,606 is formed in the end [ of a body 603 ], and tip side of the tension member 604, by making the tension member 604 slide to the sense of the drawing 2 Nakaya mark 607, the distance between both the belt support rollers 605,606 can be extended, and tension can be given to the conveyance belt 601 now. In addition, in drawing 2 R> 2, it is in the condition of having extended the distance between both the belt support rollers 605,606.

[0025] A body 603 can be assembled using the cross-section abbreviation KO character-like bony septum material 608,609, and in drawing 2 R> 2, although only the part is illustrated, it forms the rectangular frame as a whole. The plate member 606 is inserted in the interior of a body 603, it is made and attached in it, and the rigidity of a body 603 is raised. In addition, although the \*\*\*\* omission hole 607 is suitably formed in the plate member 606 and not being illustrated to it, inside these \*\*\*\* omission hole 607, the roller for suppressing bending of the conveyance belt 601 hung about etc. is arranged. moreover -- this -- it can extract and lightweight-ization of a body 603 can also be attained by the hole 607.

[0026] The penetration slot 610 on the L form is formed in the location which counters the bony septum material 608 which counters mutually, respectively. It shows the slide of the tension member 604 to this penetration slot 610, and has the slide slot 611 and the installation slot 612 which intersected perpendicularly with this and was installed up. The flute width of the penetration slot 610 is equivalent to the outer diameter of the pin 613 prepared in the tension member 604. Moreover, drawing 3 is the enlarged drawing of the penetration slot 610. With reference to drawing 3 , the crevice 614 into which some above-mentioned pins 613 can get is formed in the installation slot 612. This crevice 614 can carry out temporary maintenance of the pin 613, when a pin 613 fits in (refer to drawing 7 ). In addition, as for the wall surface configuration which constitutes this crevice 614, it is desirable to make it correspond to the outer diameter of a pin 613.

[0027] With reference to drawing 2 , the protruding piece 616 is again formed in the other end of the bony septum material 608 which counters, respectively. This protruding piece 616 is by engaging with the tension member 604 for holding in the condition (condition which extended the distance between both the belt support rollers 605,606) which shows the tension member 604 in drawing. Next, the tension member 604 has the connecting plate 615 of the pair connected with the body 608 of a frame 602, and the belt support roller 606 formed so that it might build between the points of both the connecting plates 615. The belt support roller 606 is supported free [ rotation ] with the shaft 617. In addition, with reference to drawing 1 , the belt support roller 605 formed in the end side of a body 603 is the same as this belt support roller 606, and is attached in the body 603 free [ rotation ] through the center-of-rotation shaft which is not illustrated.

[0028] The pin 613 protrudes on the end face section of a connecting plate 615 with reference to drawing 2 . This pin 613 is inserted in the penetration slot 610 established in the body 603 as mentioned above, and thereby, moreover, the tension member 604 is attached free [ a slide ] along the direction of an arrow head 607 free [ rotation ] along the direction of an arrow head 619 to the body 603.

[0029] The engagement slot 618 where the above-mentioned protruding piece 616 may be engaged is formed in the tip side of each connecting plate 615. This engagement slot 618 is deeply cut caudad from the upper limb 620 of a connecting plate 615 in drawing, and only predetermined die length is extended further at the end face side (side on which the pin 613 protruded). Therefore, in order for a protruding piece 616 to engage with the engagement slot 618, a protruding piece 616 is made to insert from the opening 621 of the engagement slot 618, and it is necessary to make it move a protruding piece 616 along the engagement slot 618 by making a connecting plate 616 slide after that by rotating a connecting plate 616.

[0030] Moreover, with this operation gestalt, the extension spring (henceforth a "spring") 622 is infixed between the bony septum material 609 of a body 603, and a pin 613. Thereby, elastic energization of the pin 613 is always carried out in the direction of an arrow head 607. That is, the tension member 604 is always energized in the direction of an arrow head 607, consequently can always extend now the distance between both the belt support rollers 605,606.

[0031] With reference to drawing 1, the conveyance belt 601 can be constituted by coating the belt made of cloth with elastic synthetic resin. This conveyance belt 601 is an endless belt, and between both the belt support rollers 605,606, as it is hung and turned, it is equipped with it. And when the belt support roller 605 drives, a manuscript is conveyed with the conveyance belt 601 which is sent so that the conveyance belt 601 may circulate along with the longitudinal direction of a frame 602, and is sent in this way.

[0032] By the way, since the conveyance belt 601 is what is contacted and conveyed in a manuscript, it may receive damage depending on dirt and the case. For this reason, the conveyance belts 601 are the components which should be exchanged periodically. As for such a substitute part, it is desirable for the exchange to be easy. In the conveyance belt unit 600 concerning this operation gestalt, the conveyance belt 601 is exchangeable as follows.

[0033] \*\* First, with reference to drawing 4, this drawing shows the condition of being equipped with the conveyance belt 601, and the tension member 604 is energized by the elastic force of a spring 622 to the drawing Nakamigi side. That is, the distance between both the belt support roller (605) and 606 is large, and tension is given to the conveyance belt 601. Therefore, the conveyance belt 601 cannot be removed in this condition.

[0034] \*\* If the belt support roller 606 is grasped by hand, the elastic force of a spring 622 is resisted with reference to drawing 5 and the tension member 604 is pressed to the left-hand side in drawing, a pin 613 will slide along the slide slot 611. Thereby, the distance between both the belt support roller (605) and 606 becomes small, and the conveyance belt 601 will be in the condition (condition which tension has not produced) of having slackened a little. Moreover, a protruding piece 616 moves the engagement slot 618 to right-hand side relatively, and is arranged in the location of the opening 621 of the engagement slot 618.

[0035] \*\* If the tension member 604 is rotated to the circumference of drawing Nakamigi with reference to drawing 6, the conveyance belt 601 will be in the condition of having hung down to the method of drawing Nakashita. In this condition, as the conveyance belt 601 is drawn out to a perpendicular direction near side to space, it can be removed easily.

\*\* Subsequently attach the new conveyance belt 601. Since the tension member 604 is in the condition of drawing 6, as this installation puts the conveyance belt 601 on a frame 602, it can be performed easily. And the left-hand side in drawing is made to rotate the tension member 604.

[0036] \*\* At this time, as shown in drawing 7, make a pin 613 once advance into the installation slot 612, and insert it in a crevice 614. Thereby, temporary maintenance is carried out by the crevice 614 in the installation slot 612, consequently the end face section of the tension member 604 is stopped in the location shown in drawing, and a pin 613 can maintain a belt support roller (605) and the condition that distance between 606 was made small. And in this condition, since tension is not produced to the conveyance belt 601, the location of the conveyance belt 601 can be corrected, the inclination to a belt support roller (605), 606, and a frame 602 etc. can be corrected, and it can arrange correctly.

[0037] With this operation gestalt, especially the attaching position of a spring 622 is in the condition of drawing 7, and it is set up so that only the predetermined include angle  $\alpha$  may pull a pin 613 up, namely, so that the force may be added in the direction from which the pin 613 concerned is pulled up above the installation slot 612 to a pin 613. Therefore, the condition that the pin 613 separated from the crevice 614 carelessly, the tension member 604 did not slide on right-hand side during the activity, and distance between a belt support roller (605) and 606 was certainly made small is maintainable.

[0038] \*\* Push up the belt support roller 606 upwards after correcting the location of the conveyance belt 601. That is, the protruding piece 616 which protruded on the body 603 is used as the supporting point, and the tension member 604 is rotated in the direction of an arrow head 625. The pin 613 which gets into a crevice 614 separates by this, and as shown in drawing 5, it advances into the slide slot 611. Then, since a pin 613 is pulled by the spring 622 and slides the slide slot 613, the distance between a belt support roller (605) and 606 becomes large along with the longitudinal direction of a frame 602, and tension is given to the conveyance belt 601.

[0039] According to the conveyance belt unit 600 which starts this operation gestalt as mentioned above At the time of exchange of the conveyance belt 601, distance between the belt support rollers 605,606 is beforehand made small. After hanging about the conveyance belt 601 new in the condition along with the longitudinal direction of a frame 602, when the location was corrected and it has arranged correctly Since tension is given to the conveyance belt 601 by

enlarging distance between the belt support rollers 605,606 linearly along with the longitudinal direction of a frame 602, it can equip with the conveyance belt 601 easily to a frame 602. And a gap of the conveyance belt 601 etc. is not produced at the time of wearing. Moreover, there is also an advantage that the location correction activity of the conveyance belt 601 can also be easily done with the above-mentioned spring 622 since the tension member 604 does not slide on right-hand side carelessly during exchange of the conveyance belt 601.

[0040] In addition, with this operation gestalt, since the penetration slot 610,630 is adopted as a means to carry out temporary maintenance of the pin 613, and to stop the end face section of the tension member 604 so that the distance between rollers of both the belt support roller 605,606 may become small, the structure for stop the tension member 604 can be simplified, and there is also an advantage that the conveyance belt unit 600 can be manufactured cheaply.

[0041] In addition, this invention is not limited to the above-mentioned operation gestalt, and can perform the following design changes. Drawing 8 is drawing showing the example of a design change of the penetration slot 610 (R> drawing 3 3 reference) established in the body 603. With reference to drawing 8, the place where the penetration slot 630 concerning this example of a design change differs from the above-mentioned penetration slot 610 The crevice 614 established in the installation slot 612 of the penetration slot 610 As opposed to being constituted by the so-called R side made to correspond to the outer diameter of a pin 613 in this example of a design change The crevice 632 formed in the installation slot 631 is in the point constituted by the crooked inclined plane which extends the flute width of the installation slot 631 gradually along the installation direction of the installation slot 631. Even if such an inclined plane constitutes a crevice 632, as shown in drawing, temporary maintenance of the pin 613 can be carried out in the installation slot 631.

[0042] In addition, by setting up suitably coefficient of friction between a pin 613 and the installation slot 612,633, although the crevice 614,632 was formed with this operation gestalt in order to carry out temporary maintenance of the pin 613, although predetermined frictional force arises and temporary maintenance of the pin 613 is carried out in the installation slot 612,631 among both according to the elastic force of a spring 622, it is possible. That is, a crevice 614,632 can also be lost.

[0043] Moreover, with this operation gestalt, in order to carry out temporary maintenance of the pin 613, the penetration slot 610,630 is adopted, but other devices can also be used if it is the device which can stop a pin 613 in the location where the distance between the belt support rollers 605,606 becomes small, and can cancel the stop condition concerned at the time of a request, and can enlarge distance between the belt support rollers 605,606.

[0044]

[Effect of the Invention] Since according to invention concerning claim 1 tension can be given to a conveyance belt by making a subframe slide to a main frame after making small distance between the 1st and 2nd rollers which support a conveyance belt beforehand at the time of exchange of a conveyance belt and hanging about a conveyance belt new in the condition along the extended direction of a main frame, wearing of a conveyance belt is very easy. Consequently, a gap of a conveyance belt can be prevented and it can equip correctly.

[0045] According to invention concerning claim 2, the same effectiveness as invention concerning claim 1 is done so. In addition, since the very easy structure of inserting the pin prepared in the subframe in the crevice of the installation slot established in the mainframe is adopted in order to make distance between rollers small, the advantage that there are no \*\*\*\* is in a steep cost rise. According to invention concerning claim 3, the same effectiveness as invention concerning claim 2 is done so. In addition, since the above-mentioned distance between rollers can be certainly made small with a maintenance means, a stop condition is not carelessly canceled during exchange of a conveyance belt, and a wearing mistake can be suppressed as much as possible.

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[Translation done.]

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TECHNICAL FIELD

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[Field of the Invention] The automatic manuscript feeder used for a copying machine is equipped with this invention, and it relates to the conveyance belt unit equipped with the conveyance belt which conveys a manuscript.

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[Translation done.]

JAPANESE [JP,10-017174,A]

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CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION  
TECHNICAL PROBLEM MEANS DESCRIPTION OF DRAWINGS DRAWINGS

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] Since according to invention concerning claim 1 tension can be given to a conveyance belt by making a subframe slide to a main frame after making small distance between the 1st and 2nd rollers which support a conveyance belt beforehand at the time of exchange of a conveyance belt and hanging about a conveyance belt new in the condition along the extended direction of a main frame, wearing of a conveyance belt is very easy. Consequently, a gap of a conveyance belt can be prevented and it can equip correctly.

[0045] According to invention concerning claim 2, the same effectiveness as invention concerning claim 1 is done so. In addition, since the very easy structure of inserting the pin prepared in the subframe in the crevice of the installation slot established in the mainframe is adopted in order to make distance between rollers small, the advantage that there are no \*\*\*\* is in a steep cost rise. According to invention concerning claim 3, the same effectiveness as invention concerning claim 2 is done so. In addition, since the above-mentioned distance between rollers can be certainly made small with a maintenance means, a stop condition is not carelessly canceled during exchange of a conveyance belt, and a wearing mistake can be suppressed as much as possible.

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[Translation done.]

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] Although exchange of the conveyance belt 8 was performed as mentioned above, there were the following troubles from the former. In order to attach a new conveyance belt, a conveyance belt is put on a frame 15 so that it may be in the condition which shows in drawing 14 first. And although the tension member 18 is rotated from this condition and it equips with a conveyance belt, since elastic energization is carried out in the direction which always gives tension to a conveyance belt with an extension spring 23, the tension member 18 must resist the elastic force of an extension spring 23, must make the tension member 18 once have to slide to the left-hand side in drawing, and must attach a conveyance belt in that condition. For this reason, there was a problem of being very hard for an operator to do an activity.

[0008] Then, the purpose of this invention is offering the conveyance belt unit which can perform exchange of a conveyance belt easily.

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[Translation done.]

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## MEANS

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[Means for Solving the Problem] In order to attain the purpose of this invention, the conveyance belt unit concerning claim 1 In the conveyance belt unit which hangs an endless conveyance belt about between the 1st roller and the 2nd roller, and conveys a manuscript with the conveyance belt concerned The mainframe prolonged in the direction on which the 1st roller is formed in the end section and a belt is hung about, While being attached possible [ a slide ] along the extended direction of a mainframe and always carrying out elastic energization in the extended direction, it can fold to a mainframe. And it is characterized by having the stop device in which the subframe concerned is stopped to a mainframe in the condition of having made the subframe by which the 2nd roller of the above was attached in the extended direction side edge section, and the subframe sliding to the anti-extension direction side.

[0010] According to this configuration, a subframe can be made to be able to slide at the time of exchange of a conveyance belt, and where distance between rollers between the 1st roller and the 2nd roller is made small, a subframe can be stopped to a mainframe. In order to attain the purpose of this invention, the conveyance belt unit concerning claim 2 When the slide slot formed in the other end of a main frame along the above-mentioned extended direction at straight side and the pin which protruded on the anti-extension direction side edge section of a subframe are engaged in a conveyance belt unit according to claim 1 The slide of a subframe is attained to the mainframe and the above-mentioned stop device is characterized by including the installation slot installed in the direction which follows the anti-extension direction side of a slide slot, and intersects the above-mentioned extended direction.

[0011] According to this configuration, the same operation as invention concerning claim 1 is done so. In invention concerning especially this claim, the above-mentioned distance between rollers is changeable by moving the pin prepared in the subframe along the slide slot formed in the mainframe. And if a pin is made to advance into the installation slot installed in the slide slot, since the installation slot is formed in the crossover direction to the slide slot, it can hold a pin by installation Mizouchi.

[0012] In order to attain the purpose of this invention, in a conveyance belt unit according to claim 2, the conveyance belt unit concerning claim 3 is prepared in the above-mentioned installation slot, and is characterized by to have further the maintenance means for holding the above-mentioned pin in the predetermined location of an installation slot that the anti-installation direction side edge section of a subframe should be stopped in the condition of having made the subframe sliding to the anti-installation direction side.

[0013] According to this configuration, the same operation as invention concerning claim 2 is done so. In addition, if a pin is made to advance into the installation slot installed in the slide slot, a pin can be held by installation Mizouchi with a maintenance means. Therefore, where distance between rollers between the 1st roller and the 2nd roller is made small, a subframe can be certainly stopped to a mainframe.

[0014]

[Embodiment of the Invention] Hereafter, 1 operation gestalt of this invention is explained to a detail with reference to an accompanying drawing. Drawing 1 is the sectional view showing the structure of a copying machine A where the conveyance belt unit 600 concerning 1 operation gestalt of this invention was adopted. With reference to this drawing, the upper part of the body 50 of a copying machine and the body 50 of a copying machine is equipped with this copying machine A, and it has the air FADO type circulation manuscript transport device (henceforth "RDH") 100 which supplies a manuscript to the body 50 side of a copying machine automatically. This RDH100 is attached rotatable to the body 50 of a copying machine, and can displace now the upper part of the body 50 of a copying machine in a wrap condition (condition shown in drawing), and the condition of opening.

[0015] RDH100 is equipped with the conveyance belt unit 600 for this invention about this RDH100. Hereafter, the outline configuration and function of RDH100 are explained. The manuscript installation section 200 for RDH100 to lay a manuscript and the mobile unit 300 for positioning the laid manuscript and setting, In order to send one



manuscript at a time to the manuscript feed zone 400 and the manuscript feed zone 400 for supplying the set manuscript to the body 50 of a copying machine. It has the manuscript separation mechanism 500 for separating the set manuscript, the conveyance belt unit 600 for moving the manuscript supplied to the body 50 side of a copying machine in the supply direction concerned or the anti-supply direction, and the manuscript discharge section 700 for discharging a manuscript from the body 50 side of a copying machine.

[0016] Next, the function of each part of RDH100 is explained generally. First, although a manuscript (not shown) is arranged on the installation plate 210 of the manuscript installation section 200, since the manuscript of B5 - A3 size can be set now, RDH100 concerning this operation gestalt moves the locating plate 250 by which opposite arrangement was carried out to an orientation plate 230 according to manuscript size (in drawing, it moves in the direction perpendicular to space). Thereby, the manuscript of each size can be positioned about a direction perpendicular to space in drawing between an orientation plate 230 and a locating plate 250.

[0017] On the other hand, if a manuscript is laid, this will be detected by the manuscript existence sensor 295 installed under the installation plate 210, and a mobile unit 300 will move in the direction of the arrow head P1 of drawing based on this and the above-mentioned manuscript size information. Thereby, a manuscript can be positioned about the longitudinal direction in drawing. Moreover, the mobile unit 300 is equipped with the original-cover device 310, and the back end section of a manuscript is pressed down by lodging, once the presser-foot bar 311 rotates and stands up in the direction of an arrow head P3. Thus, the set of a manuscript is completed after the manuscript has been positioned by the 2-way.

[0018] The manuscript set to the manuscript installation section 200 is led to the manuscript feed zone 400, and after being sent by 401 in accordance with the feed path 402, it is arranged on the feed roller pair contact glass 51 of the body 50 of a copying machine. In addition, the reference mark 403 shows the resist roller pair. Resist roller pair 403 is for doubling the timing which is made to suspend the manuscript sent in accordance with the feed path 402 in the feed path 402, and is sent in on contact glass 51. Moreover, the reference mark 404 shows the reversal roller pair. Reversal roller pair 404 is for reversing the so-called double-sided manuscript, pulls back the manuscript once arranged on contact glass 51, and sends it in accordance with the reversal path 405. the reversed manuscript -- again -- a resist roller pair -- it is sent in on contact glass 51 through 403.

[0019] The method of the manuscript separation mechanism 500 preceding that a manuscript is led to the manuscript feed zone 400, separating a manuscript using Ayr, and separating a manuscript using Ayr is well-known (refer to JP,61-291339,A). This manuscript separation mechanism 500 has the manuscript adsorption section 510 which draws in the manuscript feed zone 400 sequentially from the manuscript of the bottom among the laid manuscripts, and attracts the manuscript of the bottom by Ayr, the manuscript floatage section 550 which floats the manuscript by the side of an upper case by Ayr rather than the attracted manuscript, and the manuscript lead-in section 570 for drawing the attracted manuscript in the manuscript feed zone 400 side.

[0020] If it explains concretely, by driving the intake fan who does not illustrate, the manuscript adsorption section 510 will inhale air from the inlet port 512 by which opening was carried out on the installation plate 210 of an inlet duct 511, and will attract the manuscript of the bottom. Moreover, by driving the blower fan which is not illustrated, the manuscript floatage section 550 blows off air from the ventilation opening 552 of a fan duct 551, and floats the manuscript by the side of an upper case rather than the manuscript of the bottom. Furthermore, the manuscript lead-in section 570 has the endless lead-in belt 571. This lead-in belt 571 is hung about on a roller 513,514, and the above-mentioned inlet port 512 is arranged in the state of the wrap. Two or more through tubes (not shown) are formed in the lead-in belt 571, and if Ayr is absorbed from the above-mentioned inlet port 512 for this reason, the manuscript of the bottom will be in the condition of having adhered to the lead-in belt 571, as a result of being attracted by each through tube. And when it drives by the motor which a roller 513 does not illustrate and the lead-in belt 571 drives in the direction of an arrow head P2, the manuscript of the bottom is drawn and it is led to the manuscript feed zone 400.

[0021] Now, the manuscript arranged on contact glass 51 is sent to the manuscript discharge section 700 by the conveyance belt unit 600, after the predetermined copy actuation by the body 50 of a copying machine is made. Opposite arrangement is carried out with contact glass 51 in the condition which shows in drawing, and the conveyance belt unit 600 is driven by the motor which is not illustrated. Thereby, the manuscript on contact glass 51 is sent to the manuscript discharge section 700 side. In addition, when reversing a manuscript, inverse rotation of the conveyance belt unit 600 is carried out, and a manuscript is sent to reversal roller pair 404 side.

[0022] the manuscript sent to the manuscript discharge section 700 -- a delivery roller pair -- it is drawn by 701 in the delivery path 702. then, a manuscript -- a delivery roller pair -- in accordance with the delivery path 702, it sends by 703 -- having -- a delivery roller pair -- it is again discharged by 704,705 at the manuscript installation section 200. In

addition, the above-mentioned mobile unit 300 moves to the manuscript discharge section 700, and a part of delivery path 702 (downstream of the delivery direction) is constituted by the clearance formed between the manuscript discharge section 700 and a mobile unit 300. moreover, the delivery roller pair above-mentioned since a mobile unit 300 moves to the manuscript discharge section 700 -- 705 is prepared in the mobile unit 300 side, and moves with migration of a mobile unit 300.

[0023] The conveyance belt unit 600 is equipped with the conveyance belt 601 which contacts a manuscript and conveys a manuscript, and the place by which it is characterized [ of this operation gestalt ] has it in the point that exchange of this conveyance belt 601 can be performed now easily and correctly. Hereafter, the conveyance belt unit 600 is explained in detail. Drawing 2 is the important section perspective view of the frame 602 of the conveyance belt unit 600. With reference to drawing 1 and drawing 2 , the conveyance belt unit 600 has the frame 602 and the conveyance belt 601 with which this was equipped, is in a condition as shown in drawing 8 and drawing 9 , and is attached in the pars basilaris ossis occipitalis of the casing 115 of RDH100 rotatable.

[0024] The frame 602 has the body 603 (mainframe) and the tension member 604 (subframe) attached in the body 603 free [ rotation ]. The belt support roller 605,606 is formed in the end [ of a body 603 ], and tip side of the tension member 604, by making the tension member 604 slide to the sense of the drawing 2 Nakaya mark 607, the distance between both the belt support rollers 605,606 can be extended, and tension can be given to the conveyance belt 601 now. In addition, in drawing 2 R> 2, it is in the condition of having extended the distance between both the belt support rollers 605,606.

[0025] A body 603 can be assembled using the cross-section abbreviation KO character-like bony septum material 608,609, and in drawing 2 R> 2, although only the part is illustrated, it forms the rectangular frame as a whole. The plate member 606 is inserted in the interior of a body 603, it is made and attached in it, and the rigidity of a body 603 is raised. In addition, although the \*\*\*\* omission hole 607 is suitably formed in the plate member 606 and not being illustrated to it, inside these \*\*\*\* omission hole 607, the roller for suppressing bending of the conveyance belt 601 hung about etc. is arranged. moreover -- this -- it can extract and lightweight-ization of a body 603 can also be attained by the hole 607.

[0026] The penetration slot 610 on the L form is formed in the location which counters the bony septum material 608 which counters mutually, respectively. It shows the slide of the tension member 604 to this penetration slot 610, and has the slide slot 611 and the installation slot 612 which intersected perpendicularly with this and was installed up. The flute width of the penetration slot 610 is equivalent to the outer diameter of the pin 613 prepared in the tension member 604. Moreover, drawing 3 is the enlarged drawing of the penetration slot 610. With reference to drawing 3 , the crevice 614 into which some above-mentioned pins 613 can get is formed in the installation slot 612. This crevice 614 can carry out temporary maintenance of the pin 613, when a pin 613 fits in (refer to drawing 7 ). In addition, as for the wall surface configuration which constitutes this crevice 614, it is desirable to make it correspond to the outer diameter of a pin 613.

[0027] With reference to drawing 2 , the protruding piece 616 is again formed in the other end of the bony septum material 608 which counters, respectively. This protruding piece 616 is by engaging with the tension member 604 for holding in the condition (condition which extended the distance between both the belt support rollers 605,606) which shows the tension member 604 in drawing. Next, the tension member 604 has the connecting plate 615 of the pair connected with the body 608 of a frame 602, and the belt support roller 606 formed so that it might build between the points of both the connecting plates 615. The belt support roller 606 is supported free [ rotation ] with the shaft 617. In addition, with reference to drawing 1 , the belt support roller 605 formed in the end side of a body 603 is the same as this belt support roller 606, and is attached in the body 603 free [ rotation ] through the center-of-rotation shaft which is not illustrated.

[0028] The pin 613 protrudes on the end face section of a connecting plate 615 with reference to drawing 2 . This pin 613 is inserted in the penetration slot 610 established in the body 603 as mentioned above, and thereby, moreover, the tension member 604 is attached free [ a slide ] along the direction of an arrow head 607 free [ rotation ] along the direction of an arrow head 619 to the body 603.

[0029] The engagement slot 618 where the above-mentioned protruding piece 616 may be engaged is formed in the tip side of each connecting plate 615. This engagement slot 618 is deeply cut caudad from the upper limb 620 of a connecting plate 615 in drawing, and only predetermined die length is extended further at the end face side (side on which the pin 613 protruded). Therefore, in order for a protruding piece 616 to engage with the engagement slot 618, a protruding piece 616 is made to insert from the opening 621 of the engagement slot 618, and it is necessary to make it move a protruding piece 616 along the engagement slot 618 by making a connecting plate 616 slide after that by

rotating a connecting plate 616.

[0030] Moreover, with this operation gestalt, the extension spring (henceforth a "spring") 622 is infixed between the bony septum material 609 of a body 603, and a pin 613. Thereby, elastic energization of the pin 613 is always carried out in the direction of an arrow head 607. That is, the tension member 604 is always energized in the direction of an arrow head 607, consequently can always extend now the distance between both the belt support rollers 605,606.

[0031] With reference to drawing 1, the conveyance belt 601 can be constituted by coating the belt made of cloth with elastic synthetic resin. This conveyance belt 601 is an endless belt, and between both the belt support rollers 605,606, as it is hung and turned, it is equipped with it. And when the belt support roller 605 drives, a manuscript is conveyed with the conveyance belt 601 which is sent so that the conveyance belt 601 may circulate along with the longitudinal direction of a frame 602, and is sent in this way.

[0032] By the way, since the conveyance belt 601 is what is contacted and conveyed in a manuscript, it may receive damage depending on dirt and the case. For this reason, the conveyance belts 601 are the components which should be exchanged periodically. As for such a substitute part, it is desirable for the exchange to be easy. In the conveyance belt unit 600 concerning this operation gestalt, the conveyance belt 601 is exchangeable as follows.

[0033] \*\* First, with reference to drawing 4, this drawing shows the condition of being equipped with the conveyance belt 601, and the tension member 604 is energized by the elastic force of a spring 622 to the drawing Nakamigi side. That is, the distance between both the belt support roller (605) and 606 is large, and tension is given to the conveyance belt 601. Therefore, the conveyance belt 601 cannot be removed in this condition.

[0034] \*\* If the belt support roller 606 is grasped by hand, the elastic force of a spring 622 is resisted with reference to drawing 5 and the tension member 604 is pressed to the left-hand side in drawing, a pin 613 will slide along the slide slot 611. Thereby, the distance between both the belt support roller (605) and 606 becomes small, and the conveyance belt 601 will be in the condition (condition which tension has not produced) of having slackened a little. Moreover, a protruding piece 616 moves the engagement slot 618 to right-hand side relatively, and is arranged in the location of the opening 621 of the engagement slot 618.

[0035] \*\* If the tension member 604 is rotated to the circumference of drawing Nakamigi with reference to drawing 6, the conveyance belt 601 will be in the condition of having hung down to the method of drawing Nakashita. In this condition, as the conveyance belt 601 is drawn out to a perpendicular direction near side to space, it can be removed easily.

\*\* Subsequently attach the new conveyance belt 601. Since the tension member 604 is in the condition of drawing 6, as this installation puts the conveyance belt 601 on a frame 602, it can be performed easily. And the left-hand side in drawing is made to rotate the tension member 604.

[0036] \*\* At this time, as shown in drawing 7, make a pin 613 once advance into the installation slot 612, and insert it in a crevice 614. Thereby, temporary maintenance is carried out by the crevice 614 in the installation slot 612, consequently the end face section of the tension member 604 is stopped in the location shown in drawing, and a pin 613 can maintain a belt support roller (605) and the condition that distance between 606 was made small. And in this condition, since tension is not produced to the conveyance belt 601, the location of the conveyance belt 601 can be corrected, the inclination to a belt support roller (605), 606, and a frame 602 etc. can be corrected, and it can arrange correctly.

[0037] With this operation gestalt, especially the attaching position of a spring 622 is in the condition of drawing 7, and it is set up so that only the predetermined include angle  $\alpha$  may pull a pin 613 up, namely, so that the force may be added in the direction from which the pin 613 concerned is pulled up above the installation slot 612 to a pin 613. Therefore, the condition that the pin 613 separated from the crevice 614 carelessly, the tension member 604 did not slide on right-hand side during the activity, and distance between a belt support roller (605) and 606 was certainly made small is maintainable.

[0038] \*\* Push up the belt support roller 606 upwards after correcting the location of the conveyance belt 601. That is, the protruding piece 616 which protruded on the body 603 is used as the supporting point, and the tension member 604 is rotated in the direction of an arrow head 625. The pin 613 which gets into a crevice 614 separates by this, and as shown in drawing 5, it advances into the slide slot 611. Then, since a pin 613 is pulled by the spring 622 and slides the slide slot 613, the distance between a belt support roller (605) and 606 becomes large along with the longitudinal direction of a frame 602, and tension is given to the conveyance belt 601.

[0039] According to the conveyance belt unit 600 which starts this operation gestalt as mentioned above At the time of exchange of the conveyance belt 601, distance between the belt support rollers 605,606 is beforehand made small. After hanging about the conveyance belt 601 new in the condition along with the longitudinal direction of a frame 602,

when the location was corrected and it has arranged correctly Since tension is given to the conveyance belt 601 by enlarging distance between the belt support rollers 605,606 linearly along with the longitudinal direction of a frame 602, it can equip with the conveyance belt 601 easily to a frame 602. And a gap of the conveyance belt 601 etc. is not produced at the time of wearing. Moreover, there is also an advantage that the location correction activity of the conveyance belt 601 can also be easily done with the above-mentioned spring 622 since the tension member 604 does not slide on right-hand side carelessly during exchange of the conveyance belt 601.

[0040]

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the mimetic diagram showing the structure of the copying machine concerning 1 operation gestalt of this invention.

[Drawing 2] It is the important section perspective view of the body of the conveyance belt unit concerning this operation gestalt.

[Drawing 3] It is the enlarged drawing of a penetration slot.

[Drawing 4] It is the important section side elevation of the conveyance belt unit in the condition of being equipped with the conveyance belt.

[Drawing 5] It is the important section side elevation of the conveyance belt unit in the condition of having made distance between belt support rollers small.

[Drawing 6] It is the important section side elevation of the conveyance belt unit in the condition of having rotated the tension member.

[Drawing 7] It is the important section side elevation of the conveyance belt unit in the condition of having carried out temporary maintenance of the pin.

[Drawing 8] It is drawing showing the example of a design change of a penetration slot.

[Drawing 9] It is the mimetic diagram showing an example of the conventional automatic manuscript transport device.

[Drawing 10] It is the important section perspective view showing the activity which is made to carry out rotation standing up of the automatic manuscript transport device, and removes conveyance belt equipment.

[Drawing 11] It is the important section perspective view showing the activity which removes a conveyance belt.

[Drawing 12] It is the side elevation of the conveyance belt unit in the condition of being equipped with the conveyance belt.

[Drawing 13] In order to remove a conveyance belt, it is the important section side elevation of a conveyance belt unit showing the condition of having made the tension member sliding.

[Drawing 14] In order to remove a conveyance belt, it is the important section side elevation of a conveyance belt unit showing the condition of having rotated the tension member.

[Description of Notations]

100 RDH

600 Conveyance Belt Unit

601 Conveyance Belt

602 Frame

603 Body

604 Tension Member

605 Belt Support Roller

606 Belt Support Roller

610 Penetration Slot

611 Slide Slot

612 Installation Slot

613 Pin

614 Crevice

615 Connecting Plate

616 Protruding Piece

618 Engagement Slot

622 Spring  
630 Penetration Slot  
631 Installation Slot  
632 Crevice

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[Translation done.]

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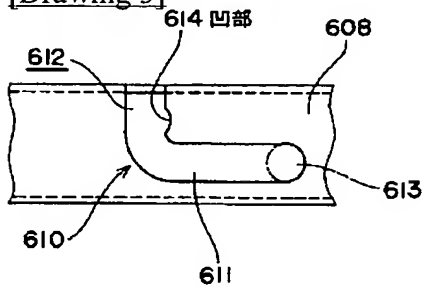
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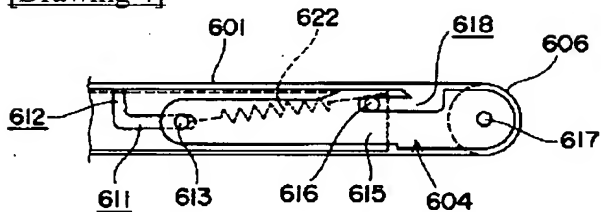
DRAWINGS

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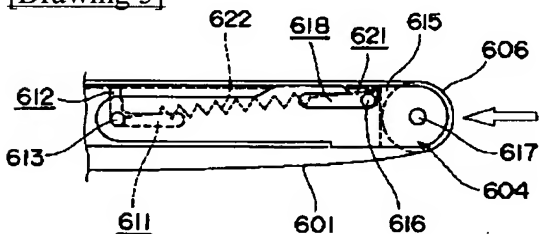
[Drawing 3]



[Drawing 4]



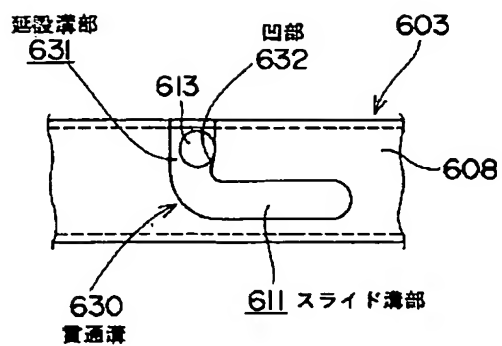
[Drawing 5]



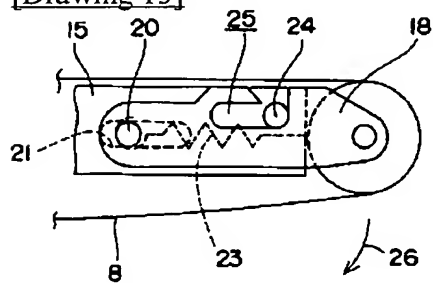
[Drawing 1]



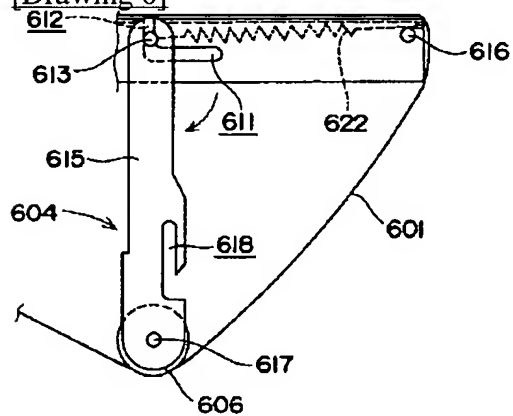




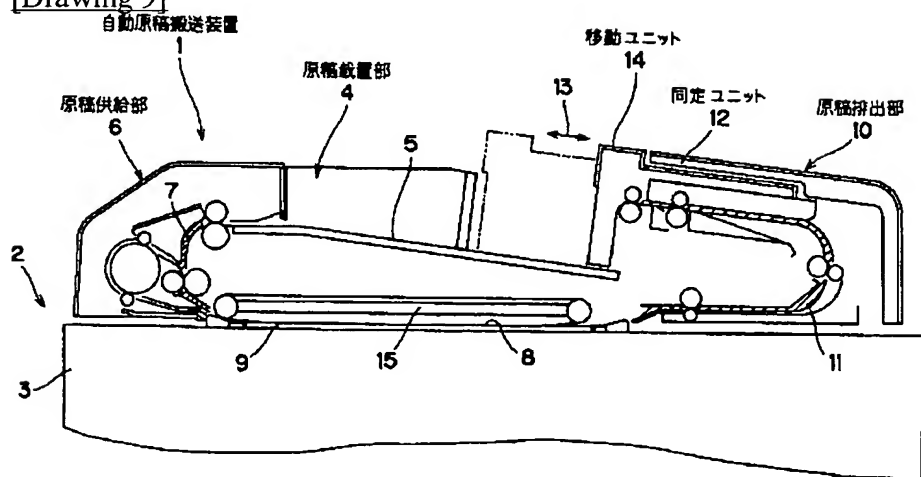
[Drawing 13]



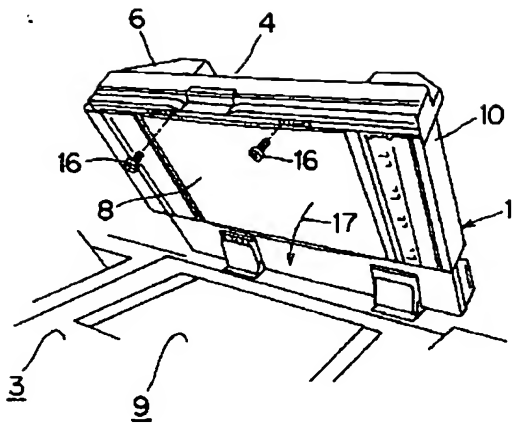
[Drawing 6]



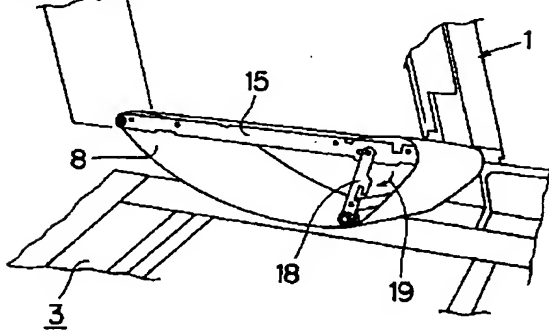
[Drawing 9]



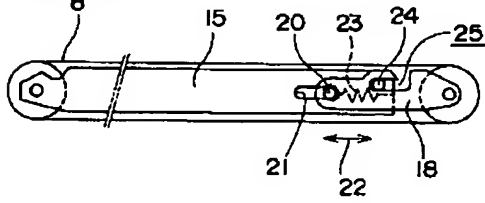
[Drawing 10]



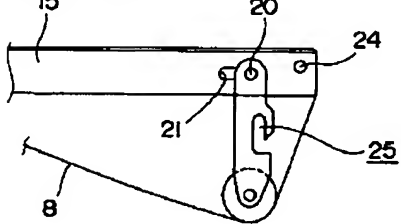
[Drawing 11]



[Drawing 12]



[Drawing 14]



[Translation done.]